

# Office of Fossil Energy

## FY 2008 Budget Request

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Assistant Secretary

February 5, 2007



TAPPING THE FULL POTENTIAL OF AMERICA'S TRADITIONAL ENERGY RESOURCES

# Fossil Energy Research & Development

At the core of the Office of Fossil Energy's mission are two fundamental objectives:

- ✓ To ensure America's **readiness to respond** to short-term energy supply disruptions; and
- ✓ To provide the nation with the best opportunity to **tap the full potential** of its abundant fossil energy resources in an environmentally sound and affordable manner



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# Meeting the President's Priorities:

## Climate Change

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**Low-cost carbon sequestration** to expand climate change options

**Higher-efficiency power plants** (gasification & fuel cells) to reduce carbon dioxide emissions

**“Zero Emissions Power Plant”** (*FutureGen*) that links high-efficiencies with carbon sequestration and hydrogen production

## Energy & Economic Security

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**Strategic Petroleum Reserve/Heating Oil Reserve** at full readiness

**Hydrogen from coal** to expedite the transition to the “hydrogen economy”

# Realizing the Promise of Clean Coal

A Commitment to Clean, Affordable Power from America's Most Abundant Energy Resource

**Coal Technology Program**      **FY 2008 Request: \$426.6 Million**

Includes FutureGen, Clean Coal Power Initiative, Carbon Sequestration, Other Supporting R&D Programs, Hydrogen from Coal, and Fuel Cells R&D

Distribution of funds varies from FY 2007 to achieve maximum program benefit in a disciplined budget environment



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# Realizing the Promise of Clean Coal

**FutureGen**    **FY 2008 Request: \$108.0 Million**

FutureGen is an initiative to build the world's first near-zero emissions, coal-based hydrogen and electric power production plant

Supported by R&D efforts in carbon sequestration, hydrogen and oxygen separation, advanced turbines, fuel cells, and gasification-related technologies

**FY2008 Activities:** Support detailed plant design and procurement activities, in addition to continuation of ongoing permitting, preliminary design, and site characterization efforts



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# Realizing the Promise of Clean Coal

## Clean Coal Power Initiative **FY 2008 Request: \$73.0 Million**

CCPI is a cooperative, cost-shared program between the government and industry to rapidly demonstrate emerging technologies in coal-based power generation to help accelerate their commercialization

- ✓ **Round 2:** Competitive solicitation completed
- ✓ **Round 3:** Competition planned for FY 2008



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# Realizing the Promise of Clean Coal

**Fuels and Power Systems Program**    **FY 2008 Request: \$245.6 Million**

✓ **Includes technology developed for advanced systems and near-zero emission plants (e.g., FutureGen)**

- Carbon Sequestration
- Fuels (Hydrogen from Coal)
- Fuel Cells
- IGCC (Integrated Gasification Combined Cycle)
- Advanced Turbines
- Advanced Research



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# Realizing the Promise of Clean Coal

Providing New Options to Meet the Challenge of  
Climate Change

**Carbon Sequestration**    **FY 2008 Request: \$79.0 Million**

- ✓ **Core Program:** Increasing emphasis on carbon capture & storage
  - CO<sub>2</sub> capture technology R&D
  - CO<sub>2</sub> storage (focus on geologic storage)
  - Measurement, monitoring and verification technology R&D



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# Realizing the Promise of Clean Coal

## Carbon Sequestration (cont'd)

- ✓ **Regional Partnerships:** National network of 7 partnerships; cooperative effort of DOE, states, universities, and industry to identify and plan for sequestration approaches most suited to a region

**FY2008 Activities:** Will initiate preliminary activities associated with Phase III large-scale field tests, Phase II Regional Partnerships will continue field validation tests involving CO<sub>2</sub> injection and monitoring, mitigation, and verification operations in saline reservoirs, depleted oil and gas fields, and coalbed methane seams; additional research will address systems to lower the costs of CO<sub>2</sub> capture; Weyburn project Phase II; support of CSLF and FutureGen



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# Realizing the Promise of Clean Coal

## Carbon Sequestration (cont'd)

- ✓ **Carbon Sequestration Leadership Forum:** The CSLF is an ambitious international effort to advance carbon capture and storage technology as a way to reduce greenhouse gas emissions

The Forum constructively engages the world's major users and producers of fossil energy in collaborative activities to address carbon dioxide emissions

The CSLF is currently comprised of 22 members, including 21 countries and the European Commission



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# Realizing the Promise of Clean Coal

## Other Supporting Coal R&D

**FY 2008 Request: \$94.5 Million**

- ✓ **Advanced Power Systems (\$72.0 Million):** Advanced, high efficiency systems for emission-free power plants
  - IGCC (Integrated Gasification Combined Cycle) (\$50 million)
  - Advanced Turbines (principally for IGCC applications) (\$22 million)
- ✓ **Advanced Research (\$22.5 Million):** University research, new materials, computational technologies, etc.



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# President's Hydrogen Initiative

Producing Tomorrow's Clean Fuels in a Coordinated Effort with the Offices of Energy Efficiency, Nuclear Energy, and the Dept. of Transportation

## Hydrogen-from-Coal **FY 2008 Request: \$10.0 Million**

### ✓ **Coal fuels research for hydrogen production**

**FY2008 Plan:** Continue establishing feasibility of coal-to-hydrogen technologies, and scale-up of advanced H<sub>2</sub>/CO<sub>2</sub> separation

## Fuel Cells – Hydrogen Use in the Power Sector

**FY 2008 Request: \$62.0 Million**

### ✓ **Focus is on reducing costs of fuel cells for distributed power**

**FY2008 Priority:** Continue the successful and highly promising work of the Solid State Energy Conversion Alliance (SECA) to develop ultra-low cost (\$400 per kilowatt) fuel cells



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# Oil and Gas Activities

## Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Research Program

- ✓ **Established by the Energy Policy Act of 2005:** Research, development and demonstration of technologies in ultra-deepwater resources, unconventional natural gas, other petroleum resources.  
(DOE will propose to repeal this program through future legislation)

## Alaska Natural Gas Pipeline

- ✓ **Office of Fossil Energy:** Charged with implementing the \$18 billion Loan Guarantee Program



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# Oil and Gas Activities (cont'd)

## Import and Export of Natural Gas

- ✓ **Authorizations:** The Natural Gas Act of 1938, as amended, requires an authorization to market, trade, or use foreign natural gas or to export domestic gas to another country
- ✓ **Monthly Reporting:** Natural gas trade including LNG

## Rocky Mountain Oilfield Testing Center

- ✓ **Conduct Field Testing on Promising Technologies**



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# Maintaining America's Energy Readiness

## Strategic Petroleum Reserve **FY 2008 Request: \$331.6 Million**

### ✓ **Maintaining America's Oil Stockpile**

Energy Policy Act directs DOE to fill the SPR to 1.0 billion barrels and select sites for this expansion

President Bush has proposed expanding the SPR to 1.5 billion barrels

## Northeast Home Heating Oil Reserve **FY 2008 Request: \$5.3 Million**

### ✓ **Ready to Respond to Fuel Oil Emergencies in the Northeast**

Established in 2000 as an “emergency buffer” that can supplement commercial supplies

Currently 2 million barrels of heating oil at leased commercial terminals



## Naval Petroleum and Oil Shale Reserves

**FY 2008 Request: \$17.3 Million**

**FY 2008 Plan:** Continue to operate NPR #3 -Teapot Dome in Wyoming

# Fossil Energy Budget

(Dollars in Thousands)

		<b>FY2008 Request</b>
<b>Research and Development</b>	<b>President's Coal Research Initiative</b>	
	Clean Coal Power Initiative	<b>\$73,000</b>
	FutureGen	<b>108,000</b>
	Fuels and Power Systems	
	Sequestration	79,077
	Other Supporting Coal R&D	94,500
	Coal-to-Hydrogen	10,000
	Fuel Cells	62,025
	<b>Total (Fuels &amp; Power Systems)</b>	<b>245,602</b>
	<b>Natural Gas</b>	<b>\$0</b>
	<b>Oil Technology</b>	<b>\$0</b>
	<b>Other R&amp;D/Prog. Direction/Mgmt.Support</b>	<b>\$140,199</b>
	<b>Total, Research and Development</b>	<b>\$566,801</b>
	Transfer of Clean Coal Technology Funds	<b>(\$58,000)</b>
<b>Petroleum Reserves</b>	Strategic Petroleum Reserve – Facilities Development	\$163,472
	Strategic Petroleum Reserve – Facilities Expansion	168,137
	Home Heating Oil Reserve	5,325
	Naval Petroleum Reserves/Elk Hills School Lands	17,301
	<b>Total, Petroleum Reserves</b>	<b>\$354,235</b>
<b>Total Fossil Energy Budget</b>		<b>\$863,036</b>

**For More Information:  
[www.fossil.energy.gov](http://www.fossil.energy.gov)**



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